AMENDMENT TO CLAIMS

Cancel claims 1 through 18 inclusive. Add new claims 19 through 22 as follows.

19 (New) A method for enhancing the capabilities of a portable, hand-held lightweight thermal imaging instrument such as Mikron Infrared Company's Model # 7200, so as to permit the thermal imaging of target surface(s) having lower temperatures typically in a first range between -40°C and 500°C or, alternately, of target surface(s) having higher temperatures typically in the range between 400°C and 2000°C, the target surface having a known absorptive wavelength, the thermal imaging taking place through intervening media having a known transmission wavelength, the instrument including a housing (12) having an opening (14) for admitting infrared rays including those emanating from said target surface(s), said rays directed along an optical path within said housing, said optical path having an optical axis (38), an optical assembly (40) positioned within said housing and in said optical path, said optical assembly having an input and an output, said infrared rays directed towards and into said input, through and out of said output of said optical assembly, said optical assembly including an objective lens (74), a negative lens (76), and focusing lens means (18, 82, 84), án un-cooled focal plane array, infrared ray detector(UFPA detector) (48) including a detecting surface (86), said UFPA detector positioned in said housing and in said optical path so as to allow the impingement of the infrared rays passing out of said optical assembly onto said detecting surface, said UFPA detector further including a spectral transmission window (84) positioned in said optical path between said output and said detecting surface, said

UFPA detector providing an electrical output proportional to the energy of the infrared rays impinging onto said detecting surface, the method comprising the steps of:

(a) disposing and coaxially aligning each of said lenses along said optical axis;

(b) employing germanium lenses with an anti-reflection coating having a spectral band width of 3um to 14um for each of said lenses forming said optical assembly;

(c) employing a spectral transmission window that has a spectral band width of 3um to 14um for said spectral window associated with said UFPA;

(d) employing an infrared filtering means (44) including a first (78) and second (80) infrared band pass filter, said first infrared band pass filter having a pass band centered at a wavelength in the bandwidth of 8 to 14um, said second infrared band pass filter having a pass band centered at a wavelength in the bandwidth of 3 to 8um, the center wavelength of each said pass bands approximating the known transmission wavelength of the intervening media and/or the absorptive wavelength range of the targeted surface;

(e) providing means on said instrument to be activated by an operator whereby one or the other of said band pass filters is interposed in said optical path depending on the temperature range of the target surface, said first infrared band pass filter interposed when the temperature of the target surface(s) is in the first range, said second infrared band pass filter interposed when the temperature of the target surface(s) is in the second range,;

(f) providing electronic means responsive to said electrical output of said UFPA including programming said electronic means with at least respective algorithms, relevant constants and emissivities for processing said electrical output of said UFPA detector so as to calculate the temperature of the targeted surface, whether the targeted surface has a

temperature in the first range between -40°C and 500°C, or alternately has a temperature in the second range between 400°C and 2000°C, said electronic means providing at least one interpretable output (26, 28, 30, 32, 72) whereby the operator is presented with information sufficient to determine the temperature(s) of the target surface(s) within an acceptable degree of accuracy.

20 (New) The method claimed in claim 19 wherein a second infrared band pass filter is selected having a pass band centered at approximately 3.9 um wavelength.

21 (New) The method claimed in claim 19 wherein a second infrared band pass filter is selected having a pass band centered at approximately 5.0 um wavelength.

22 (New) The method claimed in claim 19 wherein a second infrared band pass filter is selected having a pass band centered at approximately 6.8 um wavelength.